CONFIDENTIAL

SECRET

21 January 1958

MEMORANDUM FOR: Office of Logistics/Procurement Division/Contract Branch

SUBJECT : Request for Initiation of Task I under Contract ED-26 with [redacted] 25X1

1. The DDS developed hydrogen generator is presently undergoing a test and evaluation program with a view towards its redesign and modification. During this testing a design fault was discovered that involves high temperature metallurgy and redesign of a basic generator part is necessary. It is therefore requested that Task I under Contract ED-26 be established with [redacted] to enable this company to investigate the causes of, and consider possible remedies for, the premature failures which have occurred in the retorts of the generator. 25X1

2. Funds in the amount of $7,097.00 are to be made available to the contractor under Task I for performance of the above work in accordance with the proposal attached hereto. Charges for these funds are to be made against Allotment Number 6-2500-10.

3. Contract ED-26 is an Agency sterile contract. Task Order I should also be Agency sterile. Government interest may be shown. The item per se is unclassified. Agency interest in all work and material under the contract and task is classified Secret and may be divulged only on a need-to-know basis to appropriate security approved personnel.

The Contracting Officer is requested to advise the contractor's representative in writing of these security classifications.

In the event there is any variation in classification during the preliminary phases of the work, further guidance will be provided by the project engineer, [redacted] Room 212, West Ordbuilding, extension [redacted] 25X1 25X1 25X1

DOC 37 REV DATE 30/6/80 BY 35322
ORIG COMP 026 OPI 56 TYPE 02
ORIG CLASS S PAGES 6 REV CLASS C
JUST 11 NEXT REV 2010 AUTH: HR 70-2

[redacted]
Chief
DDS/Engineering Division

Attachments:
TSS-983-57-1434-58
Contr'r Proposal Dtd 13 Jan 58

Distribution: Orig & 1 - Addressee
1 - LB 1 - FASB
1 - SOO 1 - TSS/OC
1 - Comp. 1 - SD Chrono
1 - SRB 1 - SMI File
1 - ED-139

APPROVED FOR THE OBLIGATION OF FUNDS:

CONFIDENTIAL

Research Director Date

DD/P/TSS/SD/MT

In replying please address:

25X1

January 13, 1958

Dear Sir:

In accordance with discussions held with your technical representative on December 4, 1957, and in response to your representative's letter of December 11, 1957, we are submitting this proposed research program that is directed toward an investigation of the causes of, and consideration of the possible remedies for, the premature failures which have occurred in the retorts of the Mobile Hydrogen Generator. The primary objective of the proposed program is to provide recommendations directed toward eliminating premature failures on the basis of redesign of the retort component of the generator.

On the basis of the information available to us at present, it appears that the failures were caused by thermal stresses induced in the retorts by differences between the temperatures of the inner and outer walls. In view of the reported appearance of the cracks that occurred, the failures may have resulted from transient thermal stresses set up during start-up or shut-down of the generator.

It is our understanding that your technical representative is currently in the process of obtaining experimental data on the

relationship between temperature and time in critical regions of the retort during start-up and shut-down of the generator, and also during steady-state operation of the generator. These data would provide the experimental basis for our proposed program.

It is currently contemplated that the general procedure indicated below would be followed in the performance of the proposed research program:

(1) The temperature - time data, provided by your technical representative, would be analyzed in an attempt to determine the most critical thermal conditions involved, the relative thermal distortion of the walls of the retort, and the direction of the resultant thermal stresses. If mutually deemed necessary, discussions would be held with the personnel who had obtained the temperature - time data for your representative.

(2) A theoretical stress analysis of the retort in the particularly important region of the "torus shaped" bottom would be needed in order to develop data on the existing thermal conditions and to explore the effects of various possible remedial measures in preventing premature failures. Since an accurate, detailed analysis of this type could be quite time consuming, it is proposed that a preliminary analysis be conducted in an attempt to determine the conditions existing in the present retort that might have contributed to the failures. Then, the effort would be directed toward a theoretical examination of the various possibilities for eliminating or minimizing any undesirable thermal conditions.

(3) If, as expected, the results of the research under Steps (1) and (2) are favorable, then on the basis of the information obtained and the conclusions reached, one or more recommendations directed toward eliminating premature failures would be made relating primarily to the redesign of the retort and also to changes in any associated features of the system.

One aspect of the problem that is associated with all parts of the proposed research program is the physical and mechanical properties of the material used in the retort. Throughout the proposed program, consideration would be given to the materials requirements for operation under the particular service conditions. If a more suitable material than that being used currently is available and can be adapted to this application, then the use of such a material would be included among the recommendations made under Step (3).

It is anticipated that, after the effort under Step (1) was concluded, there would be merit in reconsidering the approach to the stress-analysis aspect of the proposed program. It is possible that the selection of the most logical approach to this part of the proposed research would depend to a great extent on the results obtained, under Step (1), from analysis of the temperature - time data. For example, if the results indicated that the most critical thermal stress occurred at the lower temperatures involved, then it might be more feasible to conduct an experimental, rather than a theoretical, stress analysis.

Monthly letter reports would be prepared describing the progress of the activity under the proposed program. These reports would be supplemented by discussions during periodic visits by your technical representative. At the end of the proposed research period, a summary report would be prepared that described the activity performed under the proposed program and included the recommendations made with regard to eliminating premature retort failures.

It is proposed that the contract provide for a four-month period of research, with an estimated appropriation of $7,097, including the fixed fee. The general breakdown of the estimated costs is attached.

The proposed contract would be a period-basis research agreement, consistent with our current contractual arrangements and providing only for a fixed period of research leading toward the objectives outlined in this proposal.

If you should have any questions regarding our proposal, please let us know. Any inquiries of a contractual nature may be directed to [redacted] at Extension 159. 25X1

Very truly yours,

[redacted] 25X1

EES:mjc

In Duplicate